OPHTHALMOSCOPIC STUDIES OF ACUTE MANIA, WITH NOTES OF CASES.*

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CONSIDERING the intimate relations of the eye to the brain; its near proximity to this important centre; the short distance between the origin and the termination of the optic nerve; the fact of its venous system terminating in that of the brain; and that the arterial supply is derived directly from the same main vessel as that of the brain; that the subvaginal (inter-sheath) space is but an extension of the subarachnoid space; and that perhaps there is a canal system in the cribriform fascia which is in communication with the same space; considering also that in the last twenty years ophthalmology has advanced with such rapidity, it certainly seems remarkable that more attenhas not been bestowed upon the ophthalmoscopic examination of the mentally diseased—the subjects of insanity.

The pathology of insanity is certainly very important, and yet of it but little is known. The eye offers a means by which we may perhaps, even in the living subject, obtain some suggestion of the diseased condition; perhaps be a guide-post which, in a path involved in the mist of uncertainty, may with a gleam of light here and there serve to give a suggestion of the way.

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In acute mania the pathology is very uncertain, both by reason of the infrequency of deaths as well as by virtue of the fact that in the majority of cases when death occurs little or no change is found. This absence of any marked lesion is not conclusive that there are no lesions during life; disturbances of the vascular supply of the brain are evanescent, and when present are not striking, and are therefore either not observed or are passed by without remark.

These ophthalmoscopic examinations were undertaken, despite considerable discouragement both from ophthalmologists and alienists, with the view of determining whether the study of eye conditions might not be of service in the pathological study of insanity, and after three years' work, examining some eight hundred insane patients, it would appear that its value would soon be evident.

It is surprising that of the many text-books and treatises on diseases of the eye, of which twenty-five were examined, but two have any reference to eye conditions in insanity. Of the sixteen text-books on insanity examined (all published since 1865) several had no reference to the subject whatever, while the rest had but a few lines or at most a page or two devoted to it.

The apathy displayed is certainly, remarkable and scarcely in keeping with that spirit of investigation with which man is supposed to be blessed. There are no unusual difficulties to be encountered in the prosecution of these investigations; time and patience are the requisities; in fact there are peculiar advantages offered—the patients are not scattered here, there, and everywhere, but are collected together, many similar cases can be examined in succession, or again dissimilar cases can be immediately contrasted. A question which here presents itself is as to the reason why the medical residents at the institutions do not prosecute the work. Their excuse must be the multiplicity of their duties preventing their devoting sufficient time to become expert. While believing that it requires constant daily work for years to be able thoroughly to recognize changes in nerve structure, as well as minute vascular changes, yet, with six months' daily work, the eye can become sufficiently trained to allow of the recognition of ordinary conditions.

That the eyes of the insane should be systematically examined, seems to be self-evident. That all patients should, if possible, be examined at least once by an experienced ophthalmologist, goes without saying; that many cases should be kept under observation, appears to be a necessity.

The amount of time this would take in a large institution would be considerable—more, perhaps, than one actively engaged in his specialty could afford. What, then, is the remedy? To have the resident or assistant-resident study up all cases after the initial examination: such cases as are worthy to be frequently examined by the resident, and as soon as the least change is observed, the case to be again examined by the expert. Of course, unusually interesting cases would be kept under the direct observation of the expert.

Among those who have labored in this field may be mentioned Köstl and Niemetschek,[1] who examined 223 eyes of 134 insane patients; Köstl,[2] later, made a special study of epileptics; Sebaldi,[3] who examined 170 patients; Voisin and Galezowski[4] made examinations of 40 cases of general paralysis; Grafé and Westphal[5] examined 14 similar cases; Billod[6] is popularly supposed to have examined the fundus of paralytic patients, but only tested the acuteness of vision (finding total blindness in 3 out of 400 cases); Allbutt[7] reports examinations of 214 patients, of whom 51 were the subjects of mania; Jehn[8] reports examinations of 153 patients (36 of whom were examined by Prof. Saemisch and Dr. Mandelstaum), of which 17 were mania cases; Bouchut,[9] among his ophthalmoscopic examinations of 234 cases of cerebral disorders, includes epilepsy and idiocy, but reports no cases of mania; Bouchut and Dubuc[10] report 31 epileptic cases; Noyes[11] reports a total of 60 patients examined; Aldridge[12] reports examinations of cases of epilepsy, of general paralysis, and acute dementia; Klein[13] reports examinations of 134 patients; Dolbeau[14] reports 2 cases of general paralysis; Monti's[15] paper has been inaccessible; Schmidt-Rempler[16] examined 128 cases of insanity, in whom he found changes in but 13; Boy[17] examined 80 cases of general paralysis; Nettleship[18] ex-

amined several general paralytics; in the cases examined by Gowers,[19] he found changes in the eye-ground infrequently; Sebaldi,[8] in his examinations of idiopathic acute mania, found no decided change in the background of the eye, but yet found disturbances of the circulation in 75 per cent. of the cases; Allbutt[7] examined 51 cases of mania, and found in "25 symptoms of intracranial disease; in 13 cases it was of doubtful meaning, and in 13 no change at all was found, or only local changes, such as glaucoma, myopia, etc."

Among his 51 mania cases examined there are 21 cases of acute mania, and, from his description of the ocular condition, I have made the following table:

ALLBUTT.—ACUTE MANIA.

	Nearly Normal.	Ret. Hyper.	Ret. Cong.	Ret. Anæmia.	Papillitis.	Sl. Atrophy.	Atrophy.	Total.
Acute mania, 1st attack. . .	1	4	2	1 (during paroxysm)	2	2	1	13
Acute mania, 2d or subsequent attacks.	2	1	0	1	1	1	2	8
Totals.	3	5	2	2	3	3	3	21

As the result of his investigation, he concludes:

1st. That symptomatic changes in the eye are to be found in a large proportion of cases of mania.

2d. That if cases known to be functional only, or incorrectly named (such as erotomania, transient mania, hysteria, etc.), be omitted, the proportion of cases presenting permanent changes in or near the optic disc is still larger.

3d. That both in mania depending on organic causes and in functional mania, the back of the eye, if observed within a few days after a paroxysm, presents a vascular suffusion or pinkness so great after severe paroxysms as to obscure the disc. No exudation is seen in these cases unless there exists some permanent mischief.

4th. That during a paroxysm, on the contrary, the disc is anæmic, perhaps from spasm of the vessels.

5th. That the permanent changes in the disc are due either to stasis from obstruction to the intracranial circulation with consecutive atrophy, or to *ramollissement* ending in simple white atrophy, or they may present changes of a mixed character.

Jehn[8] reported ophthalmoscopic examinations of seventeen cases of mania, but gives the condition of the fundus in but two or three cases.

Noyes[11] reports nineteen cases of acute mania, of which he places thirteen as accompanied by retinal hyperæmia, and six as being either normal or having an anæmic retina. Upon analyzing his cases I formed the following table:

NOYES.—ACUTE MANIA.

	Nearly Normal.	Ret. Hyper.	Ret. Cong.	Papillitis.	Sl. Atrophy.	Atrophy.	Total.
Acute mania	2	6	8	1	2	0	19

Among Klein's[13] nineteen cases of mania he found four cases of retinitis paralytica, and one case of diffuse retinitis. In the other fourteen, while he found no special lesions, he yet found unusual circulatory disturbances, but in how many of these cases it occurred is not mentioned.

Of the several cases examined by Gowers,[19] in only one was there a pathological appearance—undue and uniform redness of the disc, with a distinctly softened edge.

It may be well to indicate here the method of work, and also the terms used to express the conditions found.

The eye-examinations have been made without a knowledge of the mental condition, which was, in fact, ignored. The examination included the taking of remote vision, testing the accommodation in about one half the cases. The lids, conjunctiva, cornea, sclera, iris, and lens were examined, and the tension taken. The ophthalmoscopic examination of the vitreous, nerve, retina, and choroid, with the measurement of the refraction, was usually made without a mydriatic, although in about one hundred and fifty cases an ex-

ception to this rule was made. All other facts concerning the ocular conditions present were noted. In the early part of the study the examination was now complete, but soon the value of an examination of the ear and throat became apparent, and for the last sixteen months has always been included.

In the tables the terms nearly normal, cataracts, iritic deposits, retinal hyperæmia, retinal congestion, papillitis and slight papillitis, slight atrophy, atrophy, choroiditis, retinitis hemorrhagica, retinitis albuminurica, retinal anæmia, and glaucoma, are all that are used. Each case is recorded but once, the two eyes not being recorded separately.

As *nearly normal* have been recorded all cases which did not present any noticeable feature in either eye.

Cataracts and *iritic deposits* are only recorded where a satisfactory ophthalmoscopic view could not be obtained.

Retinal hyperæmia expresses the presence of an increased amount of blood, with little or no effusion, while *retinal congestion* is limited to a very marked increase of redness and marked enlargement of the vessels, with effusion, with sometimes a peculiar irregular, perhaps to be termed granular, appearance (the retinitis paralytic of Klein is here included) of the retina.

The term *papillitis* is used only when the optic disc is swollen and hazy, where the outlines are indistinct, or where the disc, while but slightly raised or swollen, has an indistinct edge or is congested, the porus being more or less obliterated.

Slight papillitis sufficiently expresses itself.

Slight atrophy is but a convenience to express minor grades of atrophy, in many cases of which the vision is near normal; the color and margin of the disc, with the appearance of the vessels and of the porus, being sufficient to make the diagnosis.

Atrophy includes all cases not placed under the previous headings, in which we had degeneration of the nerve, with frequently a sharpness of outline or an increase in the extent of the porus and diminution in the size of the vessels.

The other terms used have their ordinary acceptation, and therefore need no explanation.

Up to April 12, 1886, 707 insane patients were examined at the Norristown and Philadelphia hospitals, of these 130 were males and 577 females.

The condensed table will serve roughly to indicate the class of patients examined and the results.

EYE EXAMINATIONS BY DR. LAUTENBACH AT INSANE DEPARTMENT PHILADELPHIA HOSPITAL AND AT NORRISTOWN INSANE HOSPITAL.

	Nearly Normal.	Cats. and Iritic Deps.	Ret. Hyper.	Ret. Cong.	Papillitis.	Sl. Atrophy.	Atrophy.	Choroiditis.	Hemor. Ret.	Album. Ret.	Anæmic Ret.	Glaucoma.	No. of Cases.
Mania (including monomania)	41	11	42	41	30	38	63	9	1	0	1	1	278
Melancholia	40	1	30	19	9	11	21	2	2	2	2	0	139
Dementia	33	9	12	1	5	30	93	4	1	0	0	0	120
All other cases, including epilepsy, general paresis, cerebral syphilis, imbecility, opium and alcoholic habits, moral insanity and cranks,	22	1	20	14	12	8	22	2	1	0	0	0	102
Totals	136	22	104	75	56	87	199	17	5	2	3	1	707

Of the 278 mania cases 105 were of the acute type; two cases have, however, been omitted, as no histories could be obtained.

The following table will serve to show the ocular conditions present in these 103 cases.

LAUTENBACH.—ACUTE MANIA.

	Nearly normal.	Cataracts.	Ret. Hyper.	Ret. Cong.	Papil.	Sl. Atrophy.	Atrophy.	Choroiditis.	Ret. Anæm.	No. of Cases.
Mania, acute, first attack.	3	1	8	13	10	10	3	1	1	50
Second or subsequent attacks	9	1	9	11	8	3	9	3	0	53
Totals	12	2	17	24	18	13	12	4	1	103

The following table will serve to compare these results with those of Allbutt and Noyes.

MANIA, ACUTE.

	Nearly Normal.	Cataracts.	Ret. Hyper.	Ret. Cong.	Papil.	Sl. Atrophy.	Atrophy.	Chor.	Ret. Anæm.	No. of Cases.
Examined by Noyes . .	3	0	5	2	3	3	3	0	2	21
" " Allbutt. .	2	0	6	8	1	2	0	0	0	19
" " Lautenbach	12	2	17	24	18	13	12	4	1	103
Totals	17	2	28	34	22	18	15	4	3	143

It will be observed that in my observations on 101 cases of acute mania (excluding the two cases of cataract, as in these the background could not be satisfactorily examined) 11.82 per cent. were nearly normal, 16.83 per cent. had retinal hyperæmia, 23.76 per cent. retinal congestion, 17.82 papillitis, 24.75 atrophy, either slight or marked. These results are rather striking, but they are not markedly different from the results of Allbutt and Noyes, among whose cases 12.5 per cent were nearly normal.

As noted in the table, of these 103 patients 50 were first attacks. Not to occupy too much of your time, short histories of only these primary attacks will be presented. Before doing so it may be here noted that but two of our 103 patients have died; in neither has death resulted from the mental condition; in one a post-mortem was refused, in the other it revealed some fulness of the cerebral capillaries.

ACUTE MANIA CASES EXAMINED DURING THE FIRST ATTACK.

CASE 1. Female, aged twenty-eight years, married, in good health up to three weeks before admission, when, after three days of inflammation of the hand (said to be erysipelas, followed by palmar abscess), accompanied with intense pain, loss of sleep, and general debility, she developed acute mania. Symptoms in early weeks were active, but soon subsided into a condition of comparative quiet with moderate degree of intellectual derangement, from which she slowly recovered. Discharged one year and eight months after admission.

Ophththalm. exam. in eighth month of attack showed a condition of retinal congestion of both eyes with a large lymph deposit on the right nerve.

CASE 2. Female, nineteen, married. Has one child, born three weeks before admission. Previous health had been good. On the eighth day after labor, which was without complications, she had a chill, followed by fever, and on the ninth day developed maniacal symptoms of the most violent form. Admitted to the hospital on the sixteenth day of mania. Much reduced in flesh and strength; flesh bruised by throwing herself about. Vaginal examination revealed pelvic cellulitis. Kept in bed partially under influence of anodynes, with appropriate local treatment. All symptoms began to abate in two weeks. Discharged entirely well in three months.

Ophthalm. exam. in fourth week of attack showed an anæmic retina in both eyes.

CASE 3. Female, nineteen, single. Worked in factory, often did overwork, and had not always nutritious food. The physical exhaustion consequent upon this mode of life was assigned by her friends as the cause of the insanity. Admitted to the hospital on the third day of an attack of violent mania, which, after running a course of three months, terminated in recovery.

Ophthalm. exam. during the third month, when she was convalescing, and the mental symptoms had in great measure subsided, revealed retinal congestion and retained nerve-sheath of both eyes.

CASE 7. Female, forty-two years, single. Has lived without regular occupation; belongs to a family considered eccentric and highly excitable, but with no history of insanity.

At the time of admission was in a state of wild excitement. Insanity had existed for three months, beginning with melancholia and passing into mania, which had become uncontrollable only during the preceding week. After repeated exacerbations and remissions, the patient appeared to recover at the end of ten months and was discharged, but the disease has since *recurred*.

Ophthalm. exam. made in seventh month revealed atrophy of both nerves.

CASE 9.—Female, thirty-three years; married. Cause: ill-health. Admitted in sixth month of attack, of mild type. *Still in hospital;* has not recovered (twenty-seventh month). Prognosis unfavorble.

Ophthalmoscopic examination in sixth month, nearly normal; in twenty-seventh month, slight atrophy.

CASE 10.—Female, fifty years; widow. Cause: family troubles. Admitted in third week, mild type. *Still in hospital* (thirty-eighth month); now partially demented.

Ophthalmoscopic examination in eighth month, nearly normal; in thirty-eighth month, slight atrophy of both eyes.

CASE 12.—Female, thirty-two years; married. Insanity developed in third month of pregnancy; admitted in third month of attack, of mild type. Discharged, recovered (eighth month of attack); six weeks after labor.

Ophthalmoscopic examination in fourth month showed slight (syphilitic ?) atrophy of both eyes.

CASE 13—Female, twenty-seven years ; single. Cause : overwork. Admitted in third week. Recovered in one year, and no relapse since (three years).

Ophthalmoscopic examination in eleventh month showed retinal hyperæmia of both eyes.

CASE 14.—Female, nineteen years ; single. Cause : change of country. Admitted in second week. Recovered in six months.

Ophthalmoscopic examination in seventh week, retinal congestion of both eyes ; in sixth month, same condition, but less marked.

CASE 15.—Female, nineteen years ; single. Cause : measles. Admitted in fourth month. Recovered in seven months.

Ophthalmoscopic examination in tenth month, showed retinal congestion of both eyes. Re-examined five months after her discharge, when the same condition, but less marked, was observed.

CASE 17.—Female, twenty-four years ; single. Cause : ill-health. Admitted in third week. Recovered in five months.

Ophthalmoscopic examination in eighth week of attack ; showed retinal hyperæmia of both eyes.

CASE 18.—Female, eighteen years ; single. Cause : ill-health. Admitted in fourth month. Recovered in ten months.

Ophthalmoscopic examination in tenth month : retinal congestion of both eyes.

CASE 19.—Female, nineteen years ; single. No apparent cause. Mania of the hysterical type. Admitted in third week. Recovered in eight months.

Ophthalmoscopic examination in seventh month : retinal hyperæmia of both eyes ; slight papillitis, right eye.

CASE 20.—Female, twenty-eight years ; married. Melancholia, followed in three days by mania, came on eight days after labor. Recovered in five months.

Ophthalmoscopic examination in sixth week : slight atrophy of both eyes.

CASE 21.—Female, thirty-two years ; married. Father was insane before her birth. Recovered in six months.

Ophthalmoscopic examination in third month ; slight atrophy of both eyes.

CASE 23.—Female, nineteen years ; single. Cause : change of country. Admitted in fifth week. Great excitement with partial remissions. Recovered in nine months.

Ophthalmoscopic examination in seventh month (convalescent) : retinal hyperæmia of both eyes.

CASE 24.—Female, twenty-six years ; single. Cause : disappointment in love. Recovered in one year.

Ophthalmoscopic examination in seventh month : retinal hyperæmia of left eye. Re-examined four month after her discharge, and the same condition, slightly less marked, was observed.

CASE 26.—Female, seventeen years ; single. No known cause. Active manifestations of mania. Recovered in seven months.

Ophthalmoscopic examination in fourth week : papillitis, right eye.

CASE 27.—Female, twenty-one years; single. Cause: overwork. Admitted in third month. Now *in hospital* (seventh month); recovery doubtful.

Ophthalmoscopic examination in sixth month; papillitis, both eyes.

CASE 28.—Female, twenty-eight years; single. No known cause. Admitted in third week. Recovered in seven months.

Ophthalmoscopic examination in second month: slight atrophy of both eyes.

CASE 29.—Female, twenty-eight years; widow. Cause: overwork and anxiety. Admitted in third week. Recovered in six months.

Ophthalmoscopic examination in fifth month: retinal congestion of both eyes.

CASE 30.—Female, twenty-eight years; married. Cause: lactation. Admitted in sixth week. Now *in hospital;* prognosis doubtful.

Ophthalmoscopic examination in eighth week; slight atrophy of both eyes. Re-examination in seventh month (mental symptoms aggravated): slight atrophy with retinal congestion of both eyes.

CASE 32.—Female, seventy-five years; widow. Cause: family trouble. Recovered in six months.

Eye examination revealed cataracts of both eyes.

CASE 33.—Female, twenty-four years; married. Came on three weeks after labor, six months before her admission; and recovered one year later.

Ophthalmoscopic examination in sixth month: slight atrophy of both eyes.

CASE 37.—Female, twenty-seven years; married. Cause: ill-health. Developed melancholia four months previous to her admission and mania one month after admission. Now *in hospital;* prognosis favorable.

Ophthalmoscopic examination in fourth month, nearly normal; in fifth month, papillitis; in seventh month, papillitis less marked.

CASE 38.—Female, twenty-eight years; single. No known cause. Violent mania developed eight days before admission. Recovered in five months.

Ophthalmoscopic examination in first month, retinal hyperæmia of both eyes; re-examined ten months after recovery, same condition present.

CASE 39.—Female, twenty-three years; single. Cause: ill-health. Admitted in third month; recovered in eight months.

Ophthalmoscopic examination in eighth month (convalescent), retinal congestion of both eyes; re-examination twenty-eight months after recovery, retinal hyperæmia (both eyes) present.

CASE 41.—Female, twenty-five years; single. Cause: ill-health. Admitted in second month, recovered in three and a half months; but *recurred* one and a half years later, and died from the effect of hemorrhage (uterine).

Ophthalmoscopic examination in fifth week: papillitis of both eyes.

CASE 42.—Female, twenty-five years; single. Cause: overwork. A pronounced case of mania; now in fourth year, and has passed into a state of dementia. Still *in hospital.*

Ophthalmoscopic examination in eleventh month, slight atrophy of both eyes; subsequent examinations showed the atrophic condition more marked.

CASE 43.—Female, forty years; married. Developed four months after labor; now in twelfth month, and is still *in hospital;* prognosis is unfavorable.

Ophthalmoscopic examination in first month, papillitis of both eyes; in twelfth month, commencing atrophy of both eyes.

CASE 44.—Female, twenty-seven years; married. Came on five weeks after labor; now in fourth month of attack; still *in hospital;* prognosis favorable.

Ophthalmoscopic examination in fifth week, retinal hyperæmia of both eyes; in fourth month, same condition, less marked.

CASE 45.—Female, thirty years; married. Cause: overwork and anxiety. Still *in hospital* (tenth month of attack); prognosis unfavorable.

Ophthalmoscopic examination in fourth month, papillitis of both eyes; in tenth month, same condition, but less marked.

CASE 46.—Female, twenty-nine years; single. Cause: overwork. Remained in hospital for eight months without much change; then left, and has not been heard from.

Ophthalmoscopic examination in third week, papillitis of both eyes.

CASE 47.—Female, twenty-eight years; married. No known cause. Still *in hospital* (fourth month); prognosis unfavorable.

Ophthalmoscopic examination in third month: slight atrophy of both eyes.

CASE 48.—Female, twenty-five years; single. No known cause. Recovered in sixteen months.

Ophthalmoscopic examination in eleventh month: nearly normal, both eyes.

CASE 50.—Female, twenty-six years; single. Cause: phthisis. Recovered in seven months.

Ophthalmoscopic examination in first month: choroiditis, left eye.

CASE 51.—Female, twenty years; single. No known cause. Still *in hospital* (in tenth month of attack); prognosis unfavorable.

Ophthalmoscopic examination in second month, retinal congestion of both eyes; in tenth month, atrophy of both eyes.

CASE 52.—Female, twenty years; single. Cause: ill-health and family trouble. Recovered in five months.

Ophthalmoscopic examination in second month, papillitis, both eyes.

CASE 54.—Female, thirty-six years; married. Began on the

twelfth day after labor. Still *in hospital;* now, in third year of attack, in condition of chronic mania.

Ophthalmoscopic examination in sixth month, atrophy of both eyes; in third year, same condition.

CASE 55.—Female, twenty-five years; single. No known cause. Recovered in nine months.

Ophthalmoscopic examination in second week: retinal congestion of both eyes.

CASE 56.—Female, thirty-three years; married. Cause: mental shock. Now in second month of attack. Still *in hospital;* prognosis favorable.

Ophthalmoscopic examination on twelfth day: slight atrophy with choroidal congestion of both eyes.

CASE 57.—Female, thirty-five years; married. No known cause. Recovered in eleven months.

Ophthalmoscopic examination in third month: retinal hyperæmia of both eyes.

CASE 58.—Female, twenty-seven years; married. Began three weeks after labor. Recovered in three months.

Ophthalmoscopic examination in first month: retinal congestion of both eyes.

CASE 59.—Female, thirty-five years; single. Cause: overwork. Now in twenty-third month of attack; still *in hospital;* prognosis unfavorable.

Ophthalmoscopic examination in second month, retinal congestion of both eyes; in twenty-third month, slight papillitis of both eyes.

CASE 60.—Female, twenty-seven years; single. Cause: overwork. Still *in hospital* (thirteenth month of attack); prognosis favorable.

Ophthalmoscopic examination in eighth month, retinal hyperæmia of both eyes; in thirteenth month, same condition, but less marked.

CASE 93.—Male, twenty-five years; married. Cause: ill-health. Recovered in seven months, but has since *recurred* several times.

Ophth. examination in fifth month: papillitis, right eye.

CASE 94.—Male, forty years; single. Cause, intemperance. Now in thirty-fourth month of attack; still *in hospital;* in a condition of dementia.

Ophth. examination in twentieth month: slight atrophy, both eyes.

CASE 95.—Male, thirty-three years; married. Cause: irregular life. Attack came on twenty-eight months ago. He is still *in hospital,* the present diagnosis being general paresis.

Ophth. examination in eleventh month: retinal hyperæmia, both eyes, with atrophy of left eye.

CASE 96.—Male, twenty-seven years; married. Cause unknown. Recovered in fifteen months.

Ophth. examination in fourth month: retinal congestion, both eyes.

CASE 97.—Male, twenty-six years; single. Cause: intemperance. He is still *in hospital* (thirty-five months since commencement of attack), in a condition of dementia.

Ophth. examination in twenty-second month: retinal congestion, both eyes.

It will be observed that of the fifty cases twenty-eight recovered, and, so far as known, have not recurred; the termination of one case (46) is unknown. Three cases recurred, and of the eighteen still in the hospital the prognosis of four is favorable, of two doubtful, and of twelve unfavorable. Of the three patients in whom the disease recurred, two (41 and 93) presented papillitis, and one (7) a condition of atrophy. In the four cases with favorable prognoses we have retinal hyperæmia in two cases, in one (44) the disease is of four months' standing, and the retinal hyperæmia has lessened considerably during the course of the disease. The other case (60) is of thirteen months' standing, and the retinal hyperæmia has also moderated. Of the other two cases, one (37) is a case of papillitis which has become less marked, and the other (56) is a case of slight atrophy. Of the two cases of doubtful prognoses one, (27) is a case of papillitis, and the other (30) of slight atrophy. Of the twelve unfavorable cases, two (9 and 10) were nearly normal, but soon became slightly atrophic; three were accompanied with retinal congestion, one (51) becoming a case of atrophy, one (59) a case of slight papillitis, and one (97) remaining in the condition of retinal congestion; two (43 and 45) were accompanied with papillitis, three (42, 47, and 94) with slight atrophy, and two (54 and 95) with atrophy.

Among these twenty-one cases slight atrophies appeared eight times during the course of the disease, atrophies four times, and papillitis seven times.

Of the twenty-eight cases which recovered, one (48) was nearly normal; one (32) was a cataract case; six (13, 17, 23, 24, 38, and 57) were cases of retinal hyperæmia, while ten (1, 3, 14, 15, 18, 29, 39, 55, 58, and 96) were cases of retinal congestion; three (19, 26, and 52) were cases of papillitis (case 19 being classified as slight); five (12, 20, 21,

28, and 33) were cases of slight atrophy, while one (2) was a case of anæmic retina, and one (50) of choroiditis.

The case (46) of which the result was not known was a case of papillitis.

It will perhaps be interesting to contrast the eye conditions in the recovered cases with the changes in the recurred and in those who have not recovered.

	Nearly Normal.	Cataracts.	Ret. Hyp.	Ret. Cong.	Papil.	Sl. Atr.	Atrophy.	Anæm.	Ret. Chor.	No. of Cases.
Recovered cases.	1	1	6	10	3 (1 of sl. pap.)	5	0	1	1	28
Recurred and not recovered cases	2	0	2	3	6	5	3	0	0	21
Result unknown					1					1

The frequency of hyperæmia and congestion in the favorable and recovered cases is rather striking, so also is the absence of marked atrophy. In the other cases:—those which either recurred or are unfavorable, present rather a large number of cases of papillitis and atrophy.

We accepted the facts, refrained from drawing conclusions, have hoped that as our cases grew in number our knowledge would become broader, and that conclusions might develop unconsciously. In endeavoring to draw conclusions we have a difficulty with which to contend:—the undoubtedly various bases of the symptoms of mania; perhaps in one case due to an abnormality of structure, a want of development; perhaps, again, a localized congestion, or even a degeneration, or perhaps an irritation nucleus occasioning vascular disturbances by reflex action; or, again, a general vascular engorgement, or one of various diseases acting through some change in blood pressure or in the constitution of the blood or by reflex action.

A few facts have developed:—for instance, we feel that if in acute mania hyperæmias or congestions only are present, the case is apt to terminate favorably; that if papillitis be present, the chances are decidedly lessened; that this is also the case if marked atrophy be present; that if a condition of retinal hyperæmia be present, in addition to a slight

atrophy, the chances of recovery are decidedly more favorable than would be the case were the latter alone present. These general truths we believe to be evident to all who will consult our last table. That, in addition, many inferences have been unconsciously suggested during the course of this work, must be evident to all; but it is better to wait until the work is older, and the list of cases longer, and allow the inferences or theories to develop into truths before presenting them.

[1] *Prager Viertelj*, 1867, Bd. 95, p. 134.

[2] *Prager Viertelj*, 1870, Bd. 106 and 107.

[3] *Revista Clinica*, 1870. *Nagel's Jahresbericht für Ophthal.*, 1870, p. 374. *Archiv für Psychiatrie*, 1871, iii., p. 228.

[4] *L'Union méd.*, vol. xxxi., 1866, p. 404. *Schmidt's Jahrbücher*, 1869, Bd. 141, p. 79.

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[6] *Annales méd.-psychol.*, 1863, ii., p. 317.

[7] "Use of the Ophthalmoscope in Diseases of the Nervous System and of the Kidneys," 1871, p. 371.

[8] *Allgemeine Zeitschrift für Psychiatrie u. s. w.*, vol. xxx., 1873–4, p. 519.

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[12] *West Riding Lunatic Asylum Reports*, vol. i., p. 71; vol. ii., p. 223; vol. ix., p. 291.

[13] *Wiener med. Presse*, 1877, p. 89.

[14] *Archiv für Ophthalm.*, Bd. ii., p. 1. *Gaz. des hôpitaux*, 1866, No. 48.

[15] "De l'ophthalm. dans les malad. mentales."

[16] *Annales d'oculistique*, 1875, vol. lxxiv., p. 267.

[17] *Thèse de Paris*, 1879.

[18] *Ophthalm. Hosp. Reports*, vol. ix. p. 178.

[19] "Medical Ophthalmoscopy," 1882, p. 176.